ABSTRACT OF TAPED CONVERSATION BETWEEN
HARADEN PRATT AND JANE MORGAN
September 10, 1964

TAPE 1, SIDE 1

Index

1 Introduction

5-10 Silence

11 Early days (1908) in San Francisco. Adventures with an 8½ kw transmitter. Call letters KH, later SKH. Pratt's background: born 1891 to parents who were both telegraph operators, learned code at 6. Mention of Bay Counties Wireless Association (mostly young amateurs), organized about 1907.

37 Paul Seiler's electrical store, Hugh Gernsback's publication mentioned.

56 Early installations on Telegraph Hill, Russian Hill, Daly City. United Wireless Telegraph Co. Pratt with them from 1910 to 1914.

82 Pratt's home at 1530 Lombard Street with sending and receiving sets on three levels (attic to basement).

101 San Francisco telegraph operators' private network for after-hours communication. Mr. Eastman ran wires along roof tops.

110 Telegraph romance--Pratt's parents, and a poem by Goethe.

125 1905, article in newspaper by Lt. Squier about a wireless circuit between Fort Mason and Alcatraz Island.

138 The Great White Fleet came into the S.F. Bay. Pratt picked up their signals, in Continental Code.

158 Navy stations in 1908: Goat Island, TI; Mare Island, TG; Farallones, TH, used for long distance. Others on west coast. Pratt in touch with them in early 1909.

177 Communications at Mare Island in the pigeon-cote.

184 George Hanscom of the Navy installed first stations; with Captain Dodd put in entire Navy Alaska system.

200 1915--Pratt in charge of constructing all the high power stations for the Navy during the war. First use of voice communication by Navy was apparatus made by Western Electric

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Co. for use between ships in fleet when travelling--short distance, 1918. Code still preferable for long distance.

217 Pratt at Lowell High School, 1906-1909. Other amateurs in high school, but not called "hams" until years later.

223 Government passed radio act forcing amateurs to go below 200 meters, 1912. Pratt left amateur operations.

232 1911, certificate of skill. Pratt received the first 1912 license for commercial telegraph operation issued on the Pacific Coast, #1203. Worked on ships until 1914.

241 Radio Commission organized in 1927. Until then government did not control the air. After 1922 when broadcasting started, much congestion; Herbert Hoover organized various groups, order out of chaos. 1934--Communications Act passed, establishing FCC. 1911--Department of Commerce issued commercial licenses.

270 Pratt working for United Wireless Co. on oil tankers, lumber schooners, passenger vessels as wireless operator, 1912. 1911--United Wireless absorbed by Marconi. 1913-1914 Pratt worked during Christmas holidays for Marconi Co. Pratt worked with his own ham station ships west of Honolulu.

315 Undergraduate studies at University of California at Berkeley in 1913. Lick Observatory used Cal students for the computing work. Electrical engineering apparatus at Cal. Nothing in audio or radio frequencies. In Pratt's junior year, he built the department a laboratory, equipped with wireless equipment. 1913-ran antenna from Campanile to the smokestack on the Mechanics Bldg. A "first." 1914-Pratt had a class for the professors.

357 Federal Telegraph in Palo Alto. Telephony used only to interest prospective stock purchasers.

380 Armstrong and de Forest and telephony. De Forest installed wireless apparatus, radiotelephone, on the flagship Connecticut and the battleship Missouri of the fleet in 1908. Sailed around the world from Norfolk.

394 A. R. Rice, expert radio aide at Mare Island, was chief electrician on the Connecticut in 1908.

400 De Forest demonstrated talking movies in 1923 in New York at the Rialto Theater. Public not ready for it.

416 Early experiments in Bay Area in telephony--mostly stock-selling schemes--in 1908. One company built a station on Mt. Tamalpais, two tall wooden towers..called Pacific Wireless Telegraph Co.

442 1912--Federal Telegraph Co. communicating with Honolulu.

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448 Growth of radio from 1912 to 1920. United Wireless Telegraph Co. stations. Western Union, Postal Telegraph Co.

482 Introduction of continuous wave system--the Poulsen arc. Elwell bought American rights to system. Built little stations between Stockton, Sacramento, S. F. using both voice and telegraph signals. Other stations in 1911. 1912--Honolulu. CW system so superior that Navy adopted this as their standard system, 1912. 100 kw station in Canal Zone in 1913, later a 200 kw plant in San Diego, 2 350 kw plants in Pearl Harbor and Cavite. 1918 500 kw plant at Annapolis, Maryland. Also a secondary power system--such as at Mare Island, San Diego, etc.

534 Federal Telegraph in 1917 Navy took over their commercial stations on Pacific Coast.

546 Pratt built the 300 kw spark station in Bolinas in 1914, when with Marconi Co. Then with Navy as expert radio aide 1915-1919.

571 Pratt with Federal Telegraph Co. in Palo Alto. 1918, Washington Dodge, president, had shot himself. New head R. P. Schwerin. Pratt was acting head engineer in Beal's place. Telephone Co. said Federal could no longer lease wires. Federal got an injunction, then built radio communication system, 1920-1921.

638 1927-Federal Telegraph Co. handling more than half of the telegraph business between Pacific coast cities.

654 1927-purchase of Federal's communication property by Postal Corporation. Mackay Radio acquires these properties.

679 Pratt leaves Federal in 1922. Pratt in Mexico till February, 1923.

713 Pratt built the communication system for the first contract air mail carrier, Western Air Express, between Los Angeles, Salt Lake City, Los Vegas. 1925 Pratt organized a company called Airways Radio Service Incorporated in Nevada. Service started early in 1926. Used primarily for dispatching Planes and to send weather information. (Story of this company not completed on this tape nor on any other.) Pratt thinks this is now the Western Airlines company. He left in February, 1927.

END OF TAPE 1, SIDE 1

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TAPE 1, SIDE 2

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1	1952. Ellery Stone organizes dinner honoring de Forest. (Recording begins in middle of conversation in which Pratt was answering the question, "Are you a De Forest Pioneer?" His answer was "No," and he then told of how the De Forest Pioneers were started.) Pratt worked for the United Wireless Telegraph Company in 1910, an outgrowth of a de Forest company. Subsequently, Marconi Corp of America took over United Wireless.
22	Pratt in Los Angeles until February, 1927. Went to Washington where developed radio aids for air navigation in Bureau of Standards.
34	Pratt became Vice-President and chief engineer of Mackay Radio and Telegraph Company. Work brought him out here often. July, 1928 until 1951, when went to Washington as Telecommunications Advisor to the President.
47	Became Director of IRE in 1935. President in 1938. Either Treasurer or Secretary ever since. On merger committee for IRE and AIEE, 1961, 1962.
57	Pratt's material for a book giving trends of early days of the industry up until 1930. The Bay Area important. Experimenters were not in the universities, but outside.
75	European research in wave motion and propagation. Radio activity and atomic theory caused flight of scientists from wave motion study. Left wireless telegraphy in hands of others. John Stone Stone and Fessenden were exceptions to the cut and try artists.
102	Effect of "shrinking world" on scientific research.
123	Spiritual and moral decline over last 150 years.
225	Is the day of the lone inventor passed?
261	Early days of wireless at Mare Island in 1906. Discussion of SS Thomas having wireless in 1898--not confirmed.
277	1898-first rescue of a ship in distress effected through a call by wireless, off Land's End, England.

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265 Discussion of report of SS Thomas with wireless in 1898.

298 SS Sherman returning from the Philippines, August 24, 1899 announced by wireless message, lightship to Cliff House. Big news scoop for the S.F. Call.

327 Troops marched down Lombard Street past Pratt's house.

334 Pratt's first set--coherer. After 1906 used 2 arc light carbons and a sewing needle, single telephone receiver.

353 Highlights in history of electronics: Fessenden heterodyne, 1904, de Forest grid control tube, 1906, oscillating vacuum tube circuit, 1912.

376 Armstrong not inventor of the superheterodyne. Lucien Levy, a Frenchman, set forth the concept in document in World War I. Believed that Armstrong, then a Major in Signal Corps, read this.

400 Pratt got the original receiver together with regenerative receiver and it will be put in new hall of Smithsonian Institution. Not "the first." Elwell takes credit for introducing Armstrong to Levy.

428 Another step forward: concept of using continuous waves instead of damped waves from spark discharge..Fessenden. About 1907.

450 Perfection of vacuum tube transmitter that could be modulated for voice.

464 Arnold of Western Electric worked on harder vacuum. Dr. Coolidge at GE also, who told Langmuir. Langmuir took out a patent. Later Coolidge testified and Langmuir's patent was invalidated.

485 Small vacuum tube oscillators built during the war for the Navy, by Western Electric. 1915, message sent from Arlington to Eiffel Tower, also to Honolulu. Navy had equipment at Mare Island and intercepted. Pratt came to Mare Island shortly afterward and used this equipment.

502 Transmitter on the George Washington, which took Wilson to peace conference, also to first meeting where presented his 14 points. Dr. H. H. Beverage was operator on Washington. Pratt ran the shore end, description of equipment used. Talked to ship about three fourths of way across.

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522 1922--broadcasting by Western Electric. WEAF station in New York. Sold to RCA. From 1 kw in 1918 to 50 kw in 1924. Ushering in of era of vacuum tube transmitters.

543 Discovery of medium high frequencies, so-called short waves, by Marconi in 1924 on yacht Electra, around 2,000 miles.

560 Descriptions of early Marconi experiments, later trials with short waves. Mr. Franklin and Mr. Round, Marconi's assistants and the new beam antenna. Built new system in Commonwealth countries. Tied in with RCA in 1927. Cables and Wireless Ltd. formed. Short wave era--begun by Marconi.

650 Marconi's contribution..connecting an overhead wire with the ground. Was this original or from his teacher?

664 Dr. Jansky of Bell Telephone Laboratories discovered use of short waves in radio astronomy, with directive antenna. 1930's..radar. 1928, A Hoyt Taylor and Dr. Lynd Wheeler investigate ionosphere. Their pulse returns interfered with by planes and airship Akron. Others elsewhere also experimenting. Sir Watson-Watt. Discussion of magnetrons, klystrons.

END OF TAPE 1, SIDE 2

ABSTRACT OF TAPED CONVERSATION BETWEEN
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September 11, 1964

TAPE 2, SIDE 1

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1	Discussion of first distress signal sent from ship to shore. 1898 off Land's End in England. 1899, lightship to the lighthouse on the Goodwin Sands, England.
36	De Forest stations in Los Angeles and San Francisco for commerical telegraph system. 1911, both stations attached by the sheriff and closed. Failure partly due to no method of pick up and delivery of messages. Federal Telegraph procedures. Comparison of telegraph and telephone rates.
122	Life of a boy in San Francisco circa 1913. Only 1 boy in high school had a bicycle--luxury item. Autos a rarity.. 1898 saw a French gasoline motor automobile..the Fair family. 1906--more cars, played a minor part in transportation in S.F. fire.
186	Cable car system in San Francisco
238	Horsedrawn stages in California before 1917. Robert Pratt assistant general manager of Southern Pacific Company till 1897.
275	Admiral Bob Evans and the Great White Fleet in San Francisco.
297	High school training of Pratt.
322	Pratt's first wireless set. Cost $.63. Electrolytic detector later.
345	Paul Seiler's electrical supply store in San Francisco.
361	Marwedel & Co. sold tools, brass, copper. Bought wire from Roebling & Sons on Folsom near Second.
374	Pratt wired his own house for electric lights when he was 17. Problems of getting enough power for his wireless set--dangers of ham operaters blowing up houses.
437	Elwell bought de Forest equipment at sheriff's sale for $150. Used later by Pratt to build wireless laboratory at UC. Story of de Forest and friends spending night in tavern on Mt. Tamalpais.

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500 De Forest did not develop his audion as an amplifier until 1911 when Beach Thompson heard of the work of Fritz Lowenstein in Brooklyn. Work in Germany with the Lieben-Riess mercury vapor tube.

535 John Hayes Hammond, Jr. working on a radio controlled torpedo. Lowenstein worked for him.

550 Armstrong and de Forest and the oscillating tube circuit. De Forest waited a year after leaving Federal before applying for patent, in order to deprive Federal of shop rights.

601 Work of Logwood and Van Etten.

610 De Forest applied for patent on oscillating circuit, but patent was thrown into interference.Langmuir, Meissner, Armstrong. 1917--war caused proceedings to be suspended. Pratt asked by examiners for notebooks of Federal concerning the circuit. Pratt then in Navy, doing business with Federal. Beal, Federal's Washington representative then got the notebooks. Enabled de Forest to get the patent.

654 De Forest's relationship with Federal regarding shop rights.

684 Pratt expert radio aide with Navy in 1915. 1920 went to Federal.

700 RCA monopoly on oscillating circuit, for telegraphy. Telephone company kept rights for telephony.

731 Edwin Armstrong sold his super regnerative patent to RCA for stock. Prof. Michael Pupin also sold some patents to RCA for stock. Armstrong's patents not essential to RCA. Pratt says Armstrong became bitter man..suicide.

795 IRE annual convention in Philadelphia after 1934 Supreme Court Decision. Armstrong turned in his Medal of Honor, but IRE Board decided to give it back to him.

END OF TAPE 2, SIDE 1

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TAPE 2, SIDE 2

Index	
1	Continuation from side 1 re IRE Medal of Honor and Armstrong. IRE looked upon de Forest's patent victory as a merely mechanical one. Armstrong understood and introduced the feedback principle, whereas de Forest stumbled upon it by accident.
22	Mr. Organ, a Stanford student, worked for de Forest in 1912. Worked for Pratt in 1917, died in 1918. Tried to suppress the shrieks in de Forest's apparatus, not recognizing it as feedback. ...nor did de Forest.
26	Armstrong wrote a paper on the feedback principle, was published in the IRE Proceedings long before the litigation began, but could not establish a prior date to de Forest.
63	Other inventors in conflict...Ford, Bell, Morse... their inventions and patent difficulties. Present day difficulties due to American patent situation. Cross-licensing.
104	Discussion of the "electronics revolution." Age of great change.
135	Regarding education of youth in this age...advice to young people.
205	IRE-sponsored brochures giving high school students a survey of possible fields in engineering. IEEE continuing this program.
243	END OF TAPE 2, SIDE 2

Notes on Abstracts. (Written by Haraden Pratt re his interview tapes of Sept 10, 11, 1964)

Tape 1, Side 1. Page 3.

482. Should read in last sentence, Also a secondary lower powered system ---

546. Should be, 300 kw.

713. Should say, Used primarily for dispatching planes and sending weather information. This Company is still in existence, known, I think, as Western Air Lines. My association with it ceased in February 1927 when I moved to Washington, D.C.

Tape 1, side 2. Page 1. Last line should be AIEE instead of IEE. Item 47

75. Would be better to say, wave motion and propagation. Also, say atomic theory instead of atomis ctudy.

Page 2, 485. If I said I intereepted these messages it was a mistake. I came to Mare Island shortly after that experiment and found the equi qment there and made use of it.

Pape 2, side 1. Page 1, 361. Should be Roebling & Sons